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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,153

06/30/2005

Hajime Okura

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EXAMINER

ST CLAIR, ANDREW D

ART UNIT

PAPER NUMBER

3749

NOTIFICATION DATE

DELIVERY MODE

06/26/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No. 10/541,153	Applicant(s) OKURA ET AL.	
	Examiner ANDREW ST CLAIR	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5, 8 and 9 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 8-9 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/30/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 8 and 9 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The process as claimed can be practiced by another and materially different apparatus, such as on in which the order from the upstream side of an exhaust gas flow direction is not a nonleak- type gas-gas heater heat recovery unit, an absorption tower, a mist eliminator, and a nonleak-type GGH reheater. (MPEP § 806.05(e)).

Additionally, no “method of processing” was claimed in the application as originally examined.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merit. Accordingly, claims 8 and 9 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the term "consisting of one or more of" is considered to be inherently contradictory. See MPEP 2111.03. The transitional phrase "consisting of" is used to precisely define the elements of the invention to the exclusion of all else, referred to as a "closed" transitional phrase. The modifier "one or more of" effectively makes the phrase open ended, because the claim is no longer limited to only a, only b, or only c.

Further with respect to claim 1, the claim is considered to cause undue multiplicity. See MPEP 2173.05(n). Applicant has not claimed a system, but directs claims at a "device." Configurations a-c of claim 1 appear to be subcombinations which are completely distinct but directed at the common goal preventing overheating of the device. In short, claiming a device which could comprise a, could comprise b, could comprise c, could comprise a and b, could comprise a and c, could comprise b and c, or could comprise a and b and c is considered to "becloud" the invention such that it is unclear what applicants believe is inventive. This is compounded by the fact that each of a, b, and c are not simple alternatives, such as for instance materials from which a particular component could be fabricated, but are instead subcombinations each with independent functions and components. Further compounding the multiplicity is the fact that configurations b and c each also have alternative expressions, configuration b having at least 2 alternative combinations and configuration c having at least 8 alternative combinations. All told, there are over 50 different alternative configurations in claim 1.

Further with respect to claim 1, there appears to be problems with antecedent basis and/or inconsistent use of terminology. The claim introduces "a nonleak-type gas-gas heater heat recovery unit" and a "nonleak-type GGH reheater," then goes on to recited "the...nonleak-type

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gas-gas heater reheater," and "the gas-gas heater heater." The latter two recitations are without antecedent basis, which is indefinite in its own right, but also leads to uncertainty as to what structural element is referred to because the terminology isn't consistent. Truncating, abbreviating, changing, or expanding on terminology such that an element introduced as "an elongated widget assembly" is later referred to as "the widget," "said elongated assembly," or "the waterproof elongated widget assembly" only leads to confusion as to the scope of the claim. Claimed structure should have proper antecedent basis and be referred to consistently.

Claims 2 and 5 depend therefrom and fail to cure the indefiniteness.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsube (JP 06-238127) in view of Hasegawa et al. (US 6,203,598).

With respect to claim 1, Katsube discloses an exhaust gas processing device comprising, in order from the upstream side of an exhaust gas flow direction, at least a heat recovery unit 1, an absorption tower 4, a mist eliminator 5 (heater 5 is considered to be a “mist eliminator” in that it is described as evaporating mist; paragraph 0013 “...this steamy type gas heater 5, by evaporating Myst in the gas concerned and drying gas..”), a reheater 6 for circulating a heat medium with respect to the heat recovery unit arranged in a duct for exhaust gas discharged from a fire furnace, a heat suppression device for suppressing dissipated heat from the nonleak-type gas-gas heater reheater is arranged in an exhaust gas duct between the mist eliminator and nonleak-type gas-gas heater reheater, the heat suppression device consisting of: a corrosion preventive lining material is provided on an exhaust gas duct between the absorption tower and mist eliminator. (see page 2 of the English translation, line 13; “use of a corrosion resisting material is required of the device and gas duct on the emission way after heat recovery machine 1 outlet.”) Katsube is ambiguous as to whether the heat exchanger components 1 and 6 are gas-to-gas or gas-to-liquid. Hasegawa et al. disclose a similar invention utilizing a gas-to-gas heat exchanger (col. 8, ln. 7-8; “heat recovery section of gas-gas heater...”) With respect to the recitation of “nonleak,” it is considered inherent that heat exchangers are designed to prevent the leakage of heated and pressurized gases.) Therefore all the claimed elements were known in the prior art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the gas processing device of Katsube with the gas-to-gas heat exchanger of Hasegawa et al. because it is within the purview of one of ordinary skill in the art to modify known structure by substitution of one element for another known in the field to achieve a predictable result.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsube (JP 06-238127) in view of Hasegawa et al. (US 6,203,598), as applied to claim 1, in further view of Shigaki (JP 05-293335).

With respect to claim 2, Katsube further discloses the claimed subject matter wherein a steam-gas heater 7 is provided. Katsube discloses the steam-gas heater following the reheater in the exhaust path, rather than the steam-gas heater in the exhaust gas duct between the mist eliminator and nonleak-type gas-gas heater reheater; Shigaki discloses the heat suppression device directly preceding the reheater rather than preceding a steam-gas heater. It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange the steam-gas heater to be before the reheater in the exhaust path, and the heat suppression device to precede the steam-gas heater because non-critical rearrangement of parts is considered *prima facie* obvious. MPEP 2144.04, In re Japikse, 181 F.2d 1019 (CCPA 1950).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsube (JP 06-238127) in view of Hasegawa et al. (US 6,203,598), as applied to claim 1, in further view of Ochi et al. (US 6,506,348).

With respect to claim 5, Katsube in view of Hasegawa et al. discloses all of the claimed subject matter except the absorption tower structure disclosed in claim 5. Ochi et al. discloses that structure (see fig. 2), namely: a circulation tank 11 for retaining of an absorption liquid, spray nozzles 14, 15 in respective regions, while an inlet duct (above element 3 in fig. 2) for introducing exhaust gas discharged from a combustion device such as a boiler in almost a horizontal direction and an outlet duct (proximate to element 5 in fig. 2) for discharging exhaust

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gas in almost a horizontal direction are provided above this circulation tank, an exhaust gas channel 12, 13 is provided between the inlet duct and outlet duct, a partition plate (sidewall of tower 12) stood in a vertical direction having an opening portion (below element 14 in fig. 2) at a ceiling portion side (ceiling of circulation tank 11) to divide this exhaust gas channel into two chambers of an inlet duct side and an outlet duct side is provided, and an ascending current region 13 where exhaust gas introduced from the inlet duct flows upward and a descending current region 12 where exhaust gas flows downward toward the outlet duct after reversing at the opening portion of the ceiling side are formed by this partition plate, so that an ejecting absorption liquid slurry makes countercurrent contact with exhaust gas in the ascending current region and makes parallel-current contact in the descending current region. (col. 3, ln. 29-32; “an oxidation tank 11 supplied with an absorbent liquid in which an absorbent consisting of limestone is suspended (hereinafter called absorbent slurry)...”). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the absorption tower of Ochi et al. for the absorption tower of Katsube in view of Hasegawa et al. in view of Shigaki because it is within the purview of one of ordinary skill in the to modify known structure by substitution of one element for another known in the field to achieve a predictable result.

Response to Arguments

9. In re claims 1, 2, 5, and 8-9, applicants' arguments have been carefully considered and are responded to below.

The majority of applicants' arguments are directed toward the prior art rejection of the Non-final office action in light of the amendment to the claims; these arguments are moot in light

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of the new ground of rejection supra. Much of applicants' arguments are also directed toward "non-limiting feature[s]" of the application. Examiner thanks applicant for the clarification of the invention, but disagrees with any assertion that limitations absent from the claims preclude the application of prior art to the claims.

Finally, applicant makes one argument not rendered moot by the amendment and new grounds of rejection:

Further, with respect to the Examiner's assertion that it would have been obvious to use claimed non-leak feature of claim 1 with the device of KATSUBE, Applicants note that the Examiner's assertion is entirely without support, and respectfully request that the Examiner provide support for such assertion by identifying, e.g., a reference, should the Examiner choose to maintain this rejection.

Examiner maintains that it is obvious and well known in the art that heat exchangers are designed to prevent leaking, i.e. mixing, of the fluids which are exchanging heat. It is the very nature and purpose of a heat exchanger, a series of conduits provide the efficient conveyance of heat between two fluids while maintaining them in separate form; if it was suitable to mix the two fluids together this apparatus wouldn't be necessary, as they would come to temperature equilibrium when mixed. Thus it is inherent that non-leakage is a desirable and even critical attribute of a heat exchanger. Evidence of the inherency is provided by at least the following references: Curtice (US 3,087,064) (The detection and prevention of leaks is pertinent to "any process where a feed-effluent heat exchanger is employed") Blais (US 2,313,315) ("causing leaks and the heat exchanger is shortly rendered unfit for service."); Woods (US 2,394,831) ("the principal object of the present invention is to provide a a simple and convenient method for 20

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repair of such defects [leaks]...”); Sturges (US 2,846,198) (“It is an object of this invention to provide means whereby leakage in a heat exchanger of the kind specified may be reduced or prevented.”)

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW ST CLAIR whose telephone number is (571)270-3513. The examiner can normally be reached on Monday - Friday, 8 a.m. - 6 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew St.Clair/
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749